OIPE JC152
AUG 0 7 2001
PATENT & TRADEMARK OFFICE
RECEIVED
AUG 1 3 2001
Technology Center 2600

Related Pending Application
Related Case Serial No: 09/314,939
Related Case Filing Date: 05-20-99

CLAIMS:

1. A supervising system, comprising:

a central control apparatus:

a public communication network connected to said central control apparatus;

a communication adaptor connected to said public communication network;

a plurality of image forming apparatus connected to said communication adaptor via one of a wired interface and a wireless interface; and

a mobile computer selectively connected to said one of the wired interface and the wireless interface, and configured to execute communications of information between the central control apparatus and itself via the public communication network.

2. The supervising system as claimed in claim 1, wherein said central control apparatus is located at a service center.

3. The supervising system as claimed in claim 1, further comprising a dispatch system configured to dispatch a service person to a user of a respective one of the plurality of image forming apparatus, and which is linked with the central control apparatus.

4. The supervising system as claimed in claim 1, wherein said mobile computer includes:

an operation status information inputting device configured to input operation status information related to an operation status of the service person; and

an operation status information informing device configured to inform the operation status information to the central control apparatus.

5. The supervising system as claimed in claim 4, wherein said operation status information includes a security code configured to identify the mobile computer.

6. The supervising system as claimed in claim 1, wherein said mobile computer includes:

an operation history information inputting device configured to input operation history request information; and

an operation history information informing device configured to inform the operation history request information to the central control apparatus.

7. The supervising system as claimed in claim 6, wherein said central control apparatus includes:

an operation history information storing device configured to store operation history information related to an operation executed by the service person for each of said plurality of image forming apparatus when receiving the operation history information from said each of the plurality of image forming apparatus;

a reading device configured to read prescribed operation history information from said operation history information storing device when receiving a request for the operation history information from said mobile computer; and

an operation history information transmitting device configured to transmit the operation history request information to said mobile computer.

8. The supervising system as claimed in claim 1, wherein said mobile computer includes:

a service manual information request inputting device configured to input service manual request information; and

a service manual information informing device configured to inform the service manual request information to the central control apparatus.

9. The supervising system as claimed in claim 8, wherein said central control apparatus includes:

a service manual information storing device configured to store service manual information for each of the plurality of image forming apparatus;

a reading device configured to read prescribed service manual information from said service manual information storing device when receiving a request for the prescribed service manual information from said mobile computer; and

a service manual information transmitting device configured to transmit the prescribed service manual information to said mobile computer.

10. The supervising system as claimed in claim 9, wherein said mobile computer includes:

an image forming apparatus designating device configured to designate a prescribed image forming apparatus, which is to receive and print said service manual information from said central control apparatus, and said central control apparatus transmits said service manual information to said prescribed image forming apparatus.

11. The supervising system as claimed in claim 1, wherein said mobile computer includes:

an operation result information inputting device configured to input operation result information; and

an operation result information informing device configured to inform the central control apparatus of the operation result information.

12. The supervising system as claimed in claim 1, wherein said mobile computer includes:

a next user inquiry request information inputting device configured to input next user inquiry request information related to an inquiry of a next user to visit; and

a next user inquiry request information informing device configured to inform said central control apparatus of the next user inquiry request information.

13. The supervising system as claimed in claim 12, wherein said central control apparatus includes:

an action schedule information storing device configured to store information related to an action schedule of each service person;

an action schedule information reading device configured to read prescribed action schedule information from the action schedule information storing device when receiving the next user inquiry request information from the mobile computer; and

an action schedule information transmitting device configured to transmit the prescribed action schedule information corresponding to the next user inquiry request information to the mobile computer.

14. The supervising system, comprising:

a central control apparatus having a display, and a problem information storing device;

a public communication network connected to said central control apparatus;

a communication adaptor connected to said public communication network;

a plurality of image forming apparatus connected to said communication adaptor via one of a wired interface and a wireless interface;

a problem informing device configured to inform the central control apparatus when a problem has occurred in a respective image forming apparatus by automatically calling the central control apparatus;

a reset determination device configured to determine if the respective image forming apparatus having the problem can be automatically reset when receiving the informed problem from the respective image forming apparatus;

a reset instruction transmitting device configured to transmit a reset instruction from the central control apparatus to the respective image forming apparatus having the problem if the determination of the reset determination device is positive;

a resetting device configured to reset the respective image forming apparatus having the problem when receiving the reset instruction from the central control apparatus;

a reset completion determining device configured to determine if a reset operation is completed by the respective image forming apparatus having the problem; and

a problem information erasing device configured to automatically erase respective problem information stored in the problem information storing device, if the determination of the reset completion determining device is positive.

15. The supervising system as claimed in claim 14, further comprising a problem information erasing device controller configured to control the problem information erasing

device to selectively operate, if the determination of the reset completion determining device is positive.

16. The supervising system as claimed in claim 15, wherein said problem information erasing device controller controls the problem information erasing device to erase the respective problem information from the display and store the respective problem information in the problem information storing device as problem history information for the respective image forming apparatus.

17. The supervising system as claimed in claim 14, wherein said central control apparatus displays on the display or prints out a message requesting that the respective image forming apparatus needs to be repaired by a service person immediately, if receiving problem information from the respective image forming apparatus after a prescribed number of times the reset instruction has been transmitted to the respective image forming apparatus.

18. A method of supervising a plurality of image forming apparatus connected to a central control apparatus via a public communication network, comprising the steps of:

selectively connecting, either directly or indirectly, a mobile computer to a communication adaptor connected to the public communication network for executing communications of information between the central control apparatus and the mobile computer.

19. The method as claimed in claim 18, further comprising the step of locating the central control apparatus at a service center.

20. The method as claimed in claim 18, further comprising the step of dispatching a service person to a user of a selected one of the plurality of image forming apparatus.

21. The method as claimed in claim 18, further comprising the steps of:

inputting operation status information related to an operation status of the service person into the mobile computer; and

informing the operation status information to the central control apparatus.

22. The method as claimed in claim 21, further comprising the step of including a security code in the operation status information so as to identify the mobile computer to the central control apparatus.

23. The method as claimed in claim 18, further comprising the steps of:

inputting operation history request information of a respective one of the plurality of image forming apparatus into the mobile computer; and

informing the operation history request information to the central control apparatus.

24. The method as claimed in claim 23, further comprising the steps of:

storing in the central control apparatus operation information related to an operation executed by the service person for each of the plurality of image forming apparatus when the operation information is received;

reading, by the central control apparatus, prescribed operation history information from the stored operation information when a request for the operation history information is received from the mobile computer; and

transmitting the prescribed operation history information to the mobile computer.

25. The method as claimed in claim 18, further comprising the steps of:

inputting service manual request information into the mobile computer; and

informing the service manual request information to the central control apparatus.

26. The method as claimed in claim 25, further comprising the steps of:

storing in the central control apparatus service manual information for each of the plurality of image forming apparatus;

reading, by the central control apparatus, prescribed service manual information when a request for the prescribed service manual information is received from the mobile computer; and

transmitting, by the central control apparatus, the prescribed service manual information to the mobile computer.

27. The method as claimed in claim 26, further comprising the steps of:

designating a prescribed image forming apparatus, which is to receive and print the prescribed service manual information; and

transmitting, by the central control apparatus, the prescribed service manual information to the prescribed image forming apparatus.

28. The method as claimed in claim 18, further comprising the steps of:

inputting operation result information into the mobile computer; and

informing the central control apparatus of the operation result information.

29. The method as claimed in claim 18, further comprising the steps of:

inputting into the mobile computer next user inquiry request information related to an inquiry of a next user to visit; and

informing the central control apparatus of the next user inquiry request information.

30. The method as claimed in claim 29, further comprising the steps of:

storing in the central control apparatus schedule information related to a schedule of each service person;

reading, by the central control apparatus, prescribed schedule information when the next user inquiry request information is received from the mobile computer; and

transmitting, by the central control apparatus, the prescribed schedule information corresponding to the next user inquiry request information to the mobile computer.

31. A method of supervising a plurality of image forming apparatus connected to a central control apparatus, which includes a display and a problem information storing device, via a public communication network, comprising the steps of:

informing the central control apparatus when a problem has occurred in a respective image forming apparatus by automatically calling the central control apparatus;

determining if the respective image forming apparatus having the problem can be automatically reset when receiving the informed problem from the respective image forming apparatus;

transmitting a reset instruction from the central control apparatus to the respective image forming apparatus if the determination of the determining step is positive;

resetting the respective image forming apparatus when receiving the reset instruction from the central control apparatus;

determining if a reset operation is completed by the respective image forming apparatus having the problem; and

automatically erasing respective problem information stored in the problem information storing device, if the determination of the reset determining step is positive.

32. The method as claimed in claim 31, wherein the automatically erasing step is controlled to selectively operate, if the determination of the reset determining step is positive.

33. The method as claimed in claim 31, wherein the automatically erasing step erases the respective problem information from the display and stores the respective problem information in the problem information storing device as problem history for the respective image forming apparatus.

34. The method as claimed in claim 31, further comprising the step of displaying on the display a message requesting that the respective image forming apparatus needs to be repaired by a service person immediately, if receiving problem information from the respective image forming apparatus after a prescribed number of times of the reset instruction has been transmitted to the respective image forming apparatus.

35. The method as claimed in claim 31, further comprising the step of printing a message requesting that the respective image forming apparatus needs to be repaired by a service person immediately, if receiving problem information from the respective image forming apparatus after a prescribed number of times of the reset instruction has been transmitted to the respective image forming apparatus.

36. A system for supervising a plurality of image forming apparatus connected to a central control apparatus via a public communication network, comprising:

means for selectively connecting, either directly or indirectly, a mobile computer to a communication adaptor connected to the public communication network for executing communications of information between the central control apparatus and the mobile computer.

37. The system as claimed in claim 36, further comprising means for dispatching a service person to a user of a selected one of the plurality of image forming apparatus.

38. The system as claimed in claim 36, further comprising:

means for inputting operation status information related to an operation status of the service person into the mobile computer; and

means for informing the operation status information to the central control apparatus.

39. The system as claimed in claim 38, further comprising means for including a security code in the operation status information so as to identify the mobile computer to the central control apparatus.

40. The system as claimed in claim 36, further comprising:

means for inputting operation history request information of a respective one of the plurality of image forming apparatus into the mobile computer; and

means for informing the operation history request information to the central control apparatus.

41. The system as claimed in claim 40, further comprising:

means for storing in the central control apparatus operation information related to an operation executed by the service person for each of the plurality of image forming apparatus when the operation information is received;

means for reading, by the central control apparatus, prescribed operation history information from the stored operation information when a request for the operation history information is received from the mobile computer; and

means for transmitting the prescribed operation history information to the mobile computer.

42. The system as claimed in claim 36, further comprising:

means for inputting service manual request information into the mobile computer; and

means for informing the service manual request information to the central control apparatus.

43. The system as claimed in claim 42, further comprising:

means for storing in the central control apparatus service manual information for each of the plurality of image forming apparatus;

means for reading, by the central control apparatus, prescribed service manual information when a request for the prescribed service manual information is received from the mobile computer; and

means for transmitting, by the central control apparatus, the prescribed service manual information to the mobile computer.

44. The system as claimed in claim 43, further comprising:

means for designating a prescribed image forming apparatus, which is to receive and print the prescribed service manual information; and

means for transmitting, by the central control apparatus, the prescribed service manual information to the prescribed image forming apparatus.

45. The system as claimed in claim 36, further comprising:

means for inputting operation result information into the mobile computer; and

means for informing the central control apparatus of the operation result information.

46. The system as claimed in claim 36, further comprising:

means for inputting into the mobile computer next user inquiry request information related to an inquiry of a next user to visit; and

means for informing the central control apparatus of the next user inquiry request information.

47. The system as claimed in claim 46, further comprising:

means for storing in the central control apparatus schedule information related to a schedule of each service person;

means for reading, by the central control apparatus, prescribed schedule information when the next user inquiry request information is received from the mobile computer; and

means for transmitting, by the central control apparatus, the prescribed schedule information corresponding to the next user inquiry request information to the mobile computer.

48. A system of supervising a plurality of image forming apparatus connected to a central control apparatus, which includes a display and a problem information storing device, via a public communication network, comprising:

means for informing the central control apparatus when a problem has occurred in a respective image forming apparatus by automatically calling the central control apparatus;

means for determining if the respective image forming apparatus having the problem can be automatically reset when receiving the informed problem from the respective image forming apparatus;

means for transmitting a reset instruction from the central control apparatus to the respective image forming apparatus if the determination of the determining means is positive;

means for resetting the respective image forming apparatus when receiving the reset instruction from the central control apparatus;

means for determining if a reset operation is completed by the respective image forming apparatus having the problem; and

means for automatically erasing respective problem information stored in the problem information storing device, if the determination of the reset determining means is positive.

49. The system as claimed in claim 48, wherein the automatically erasing means is controlled to selectively operate, if the determination of the reset determining step is positive.

50. The system as claimed in claim 48, wherein the automatically erasing means erases the respective problem information from the display and stores the respective problem information in the problem information storing device as problem history for the respective image forming apparatus.

51. The system as claimed in claim 48, further comprising means for displaying on the display a message requesting that the respective image forming apparatus needs to be repaired by a service person immediately, if receiving problem information from the respective image forming apparatus after a prescribed number of times of the reset instruction has been transmitted to the respective image forming apparatus.

52. The system as claimed in claim 48, further comprising means for printing a message requesting that the respective image forming apparatus needs to be repaired by a service person immediately, if receiving problem information from the respective image forming apparatus after a prescribed number of times of the reset instruction has been transmitted to the respective image forming apparatus.

ABSTRACT OF THE DISCLOSURE

A Supervising System for Image Forming Apparatus

A supervising system for image forming apparatus includes a central control apparatus, a public communication network connected to the central control apparatus, a communication adaptor connected to the public communication network, and a plurality of image forming apparatus connected to the communication adaptor via a wired or a wireless interface. The supervising system further includes a mobile computer selectively connected to the wired or wireless interface directly or indirectly for executing communications of information between the central control apparatus and itself via the public communication network. Also included is a method of supervising the plurality of image forming apparatus connected to the central control apparatus via the public communication network, including the steps of selectively connecting, either directly or indirectly, a mobile computer to a communication adaptor connected to the public communication network for executing communications of information between the central control apparatus and the mobile computer.

Fig. 1

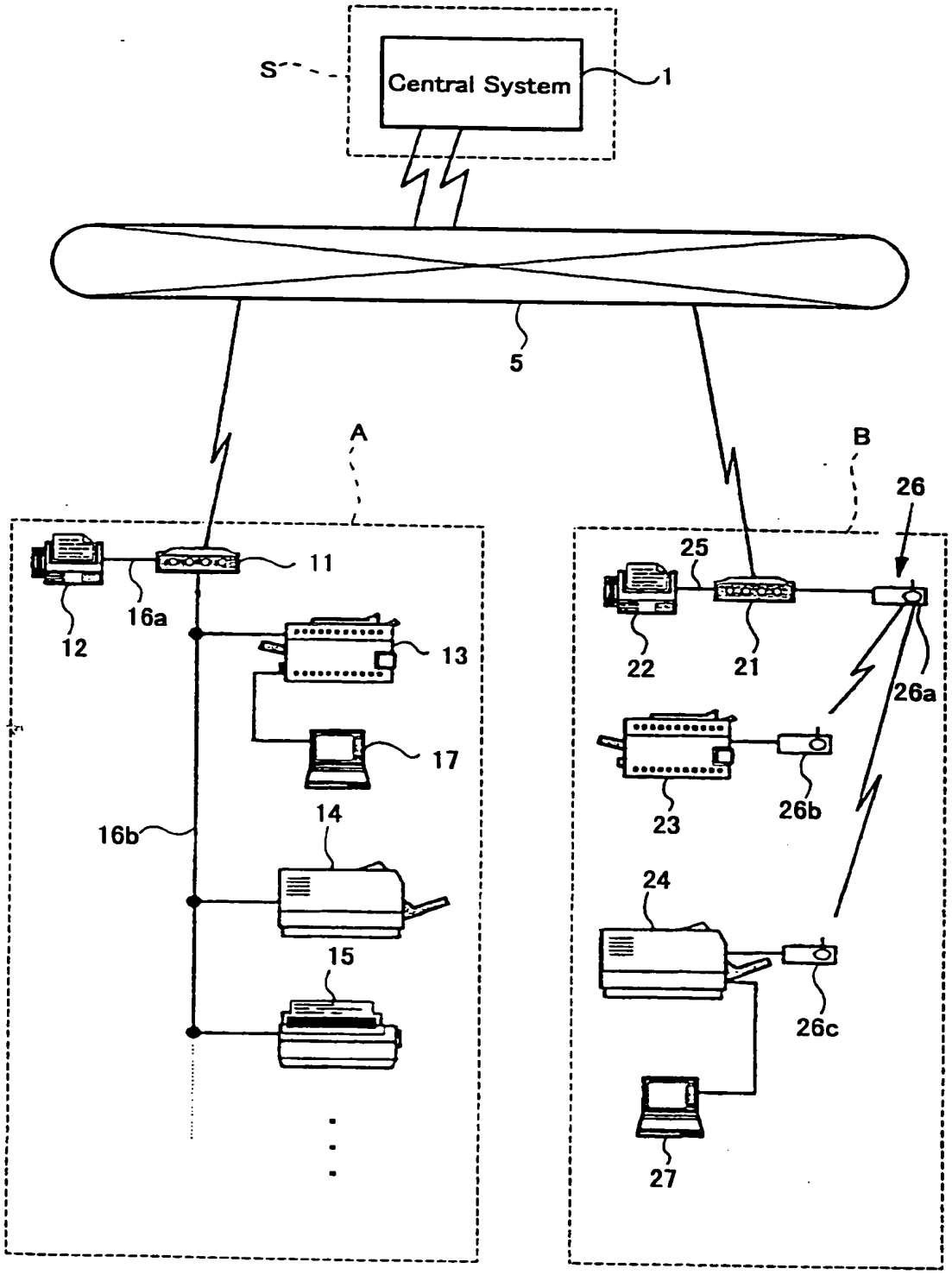

S
Central System
1
5
A
B
26
11
16a
12
13
17
14
16b
15
25
22
21
26a
23
26b
24
26c
27

Fig. 2

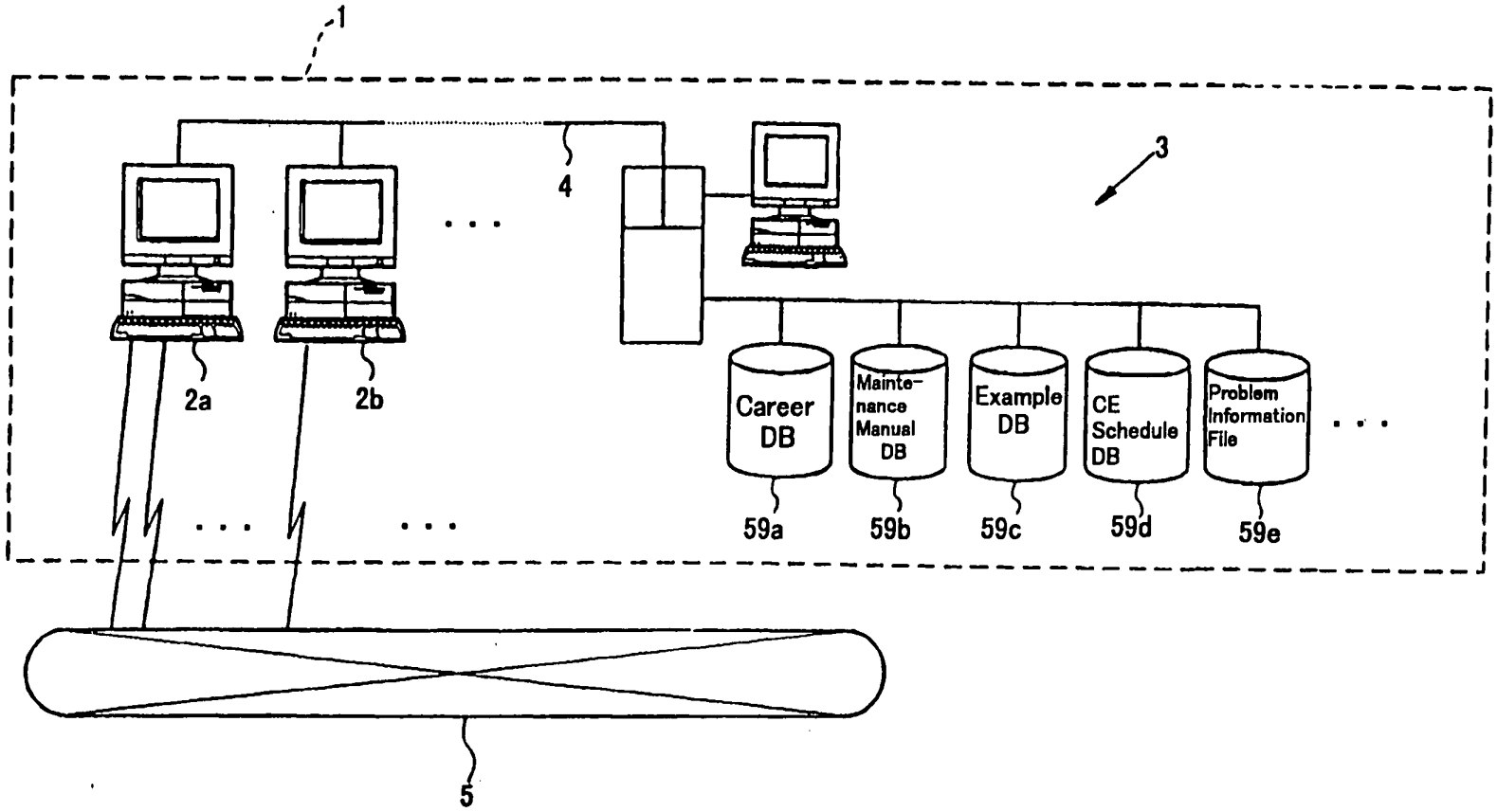

1
2a
2b
4
3
Career DB
Maintenance Manual DB
Example DB
CE Schedule DB
Problem Information File
59a
59b
59c
59d
59e
5

Fig. 3

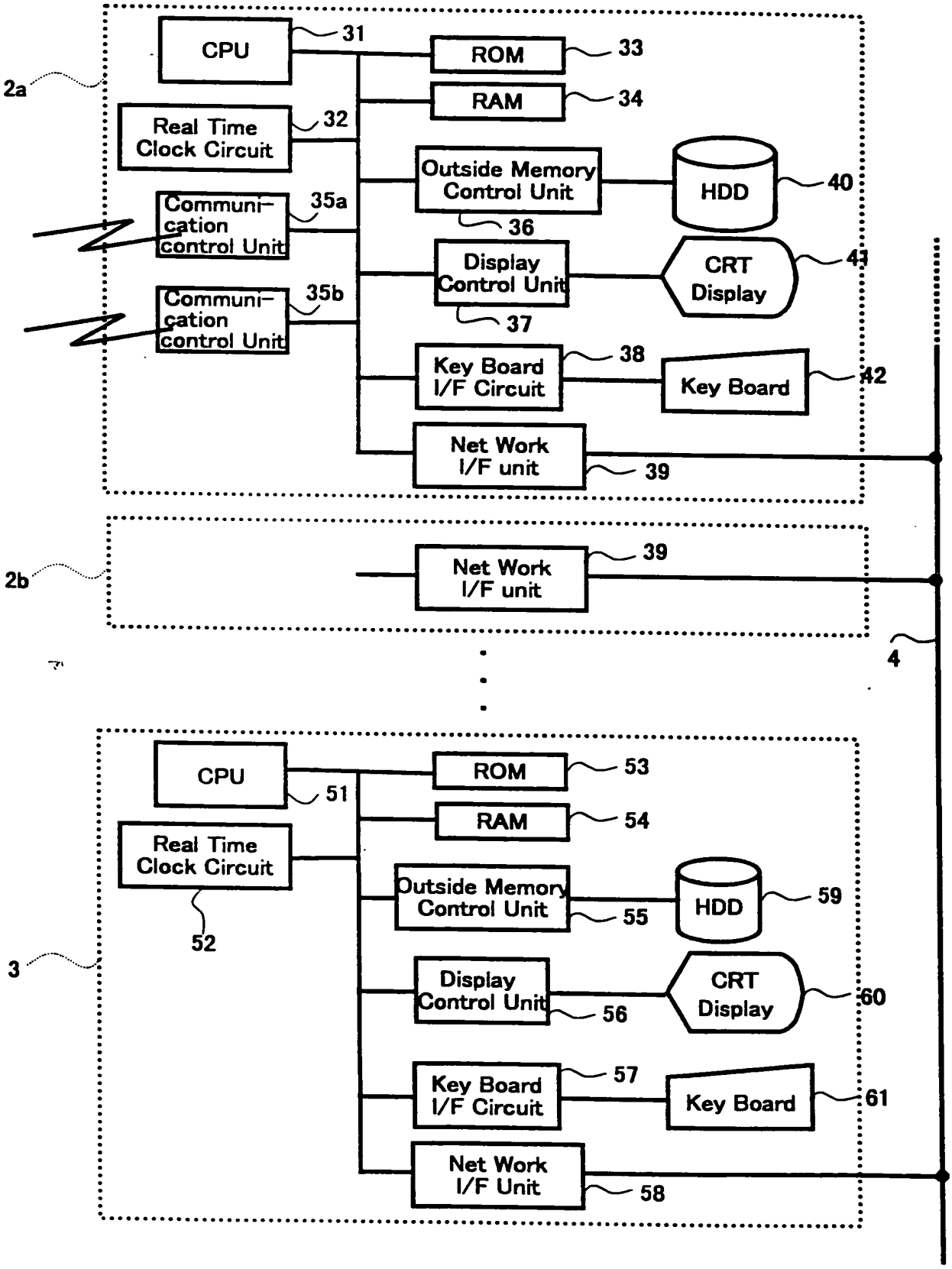

CPU
31
ROM
33
RAM
34
2a
Real Time Clock Circuit
32
Outside Memory Control Unit
HDD
40
36
Communi-cation control Unit
35a
Display Control Unit
CRT Display
41
37
Communi-cation control Unit
35b
Key Board I/F Circuit
38
Key Board
42
Net Work I/F unit
39
2b
Net Work I/F unit
39
4
CPU
51
ROM
53
RAM
54
Real Time Clock Circuit
52
Outside Memory Control Unit
55
HDD
59
3
Display Control Unit
56
CRT Display
60
Key Board I/F Circuit
57
Key Board
61
Net Work I/F Unit
58

Fig. 4

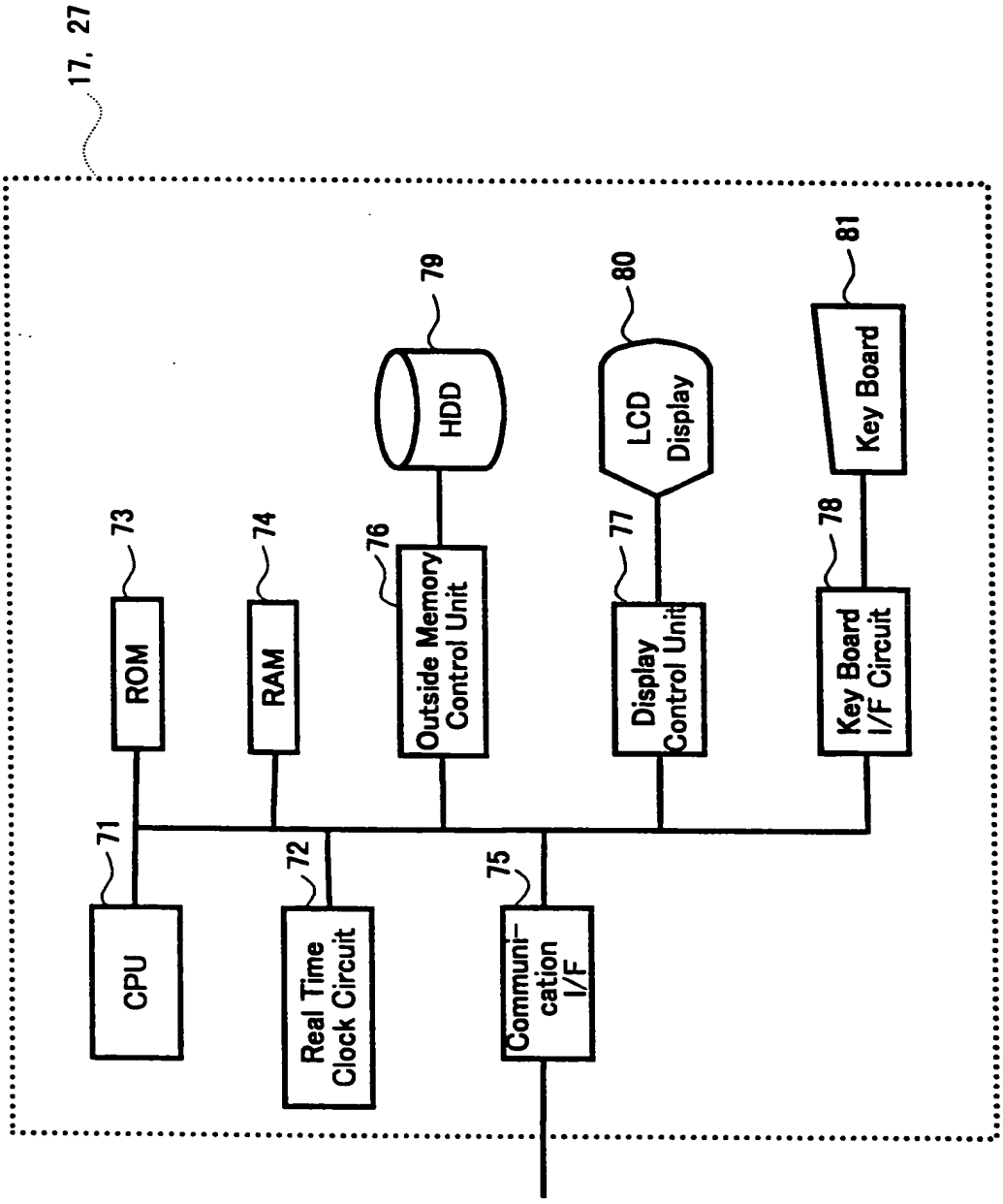

17, 27
CPU
71
ROM
73
RAM
74
Real Time Clock Circuit
72
Outside Memory Control Unit
76
HDD
79
Communi-cation I/F
75
Display Control Unit
77
LCD Display
80
Key Board I/F Circuit
78
Key Board
81

Fig. 5

SEQ No.	User Name	Model Name	Call-Classification	Data-Arrival-Time	Elapsed-Time (Minute)	CE-delivering Status	・・・
0005		FT-7000	SC301	09 : 10	5	Arrival	
0006	SSS Business Concern	MF-250F	SC100	09 : 10	20	Operation Start	
0007	TTT Store	FT-5500	SC102	09 : 11	15	-	
・ ・ ・							

Fig. 6

SEQ No.	User ID	Model Name/ Model Number	Call-Classification	Data-Arrival-Time	Elapsed-Time (Minute)	CE-Delivering-Status	・・・
0005	XX・・・03	XXXXX	301	09 : 10	5	01	
0006	XX・・・19	XXXXX	100	09 : 10	20	02	
0007	XX・・・50	XXXXX	102	09 : 11	15	00	
・							
・							
・							

Fig. 7

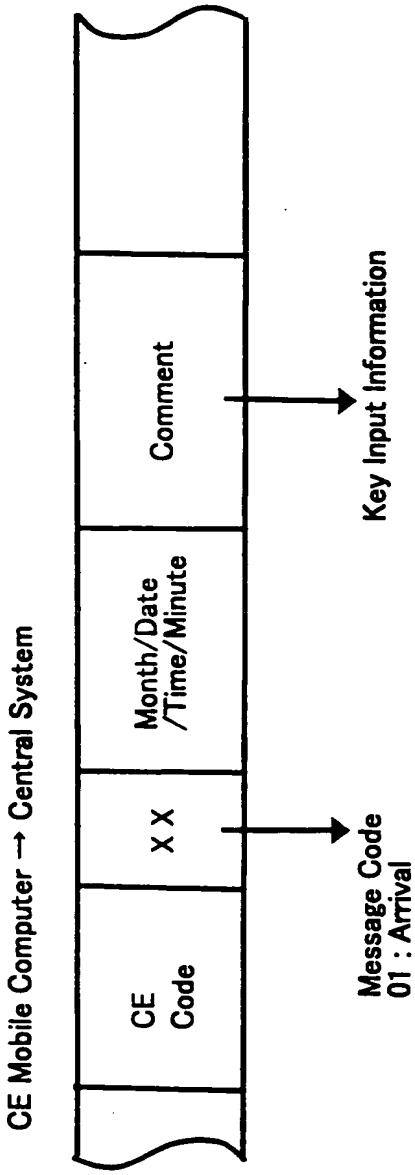

CE Mobile Computer → Central System
CE Code
X X
Month/Date /Time/Minute
Comment
Key Input Information
Message Code
01 : Arrival
02 : Operation Start
03 : Operation End

Fig. 8

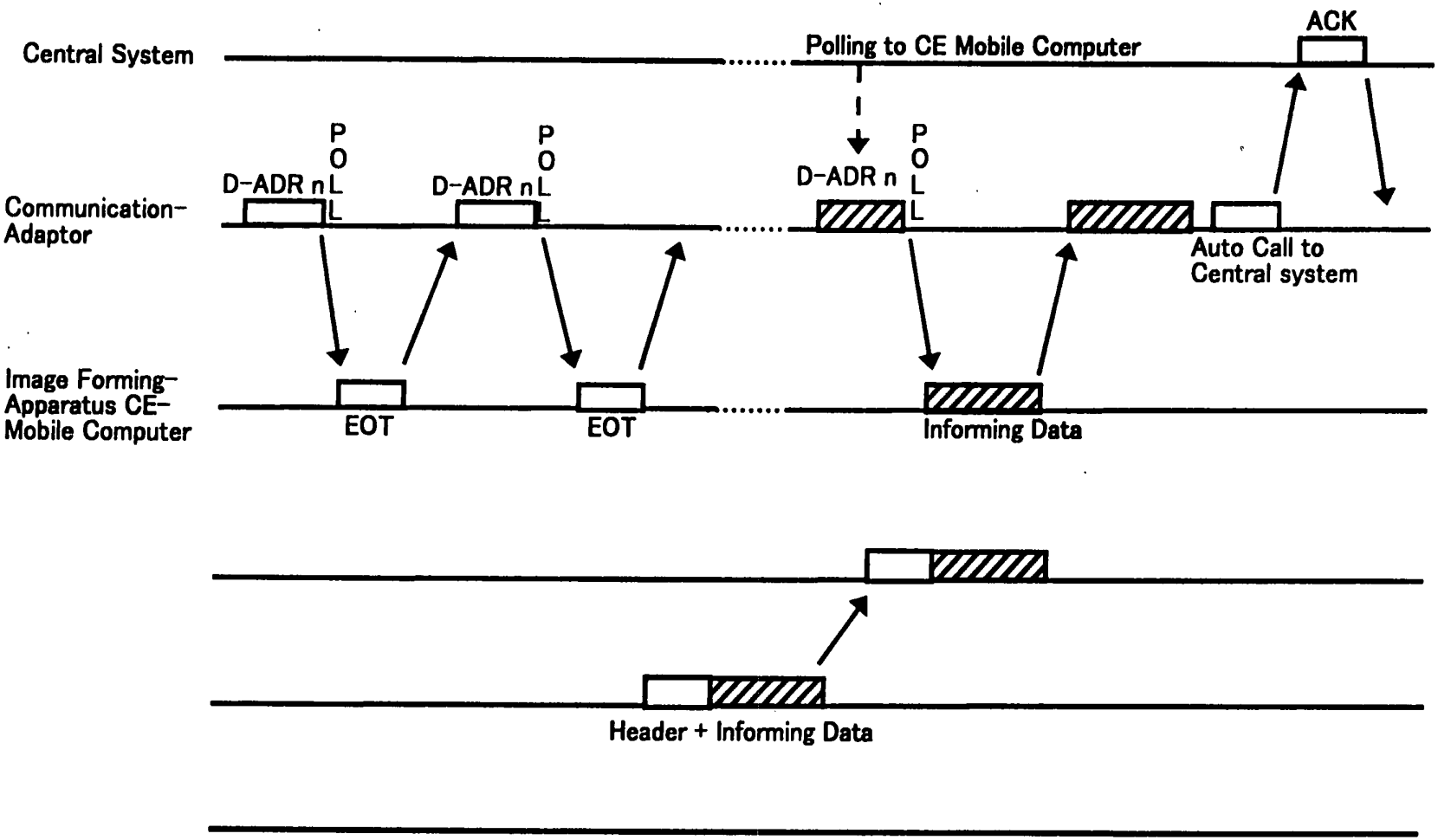

Central System
Polling to CE Mobile Computer
ACK
Communication-Adaptor
D-ADR n
POL
D-ADR n
POL
D-ADR n
POL
Auto Call to Central system
Image Forming-Apparatus CE-Mobile Computer
EOT
EOT
Informing Data
Header + Informing Data

Fig. 9A

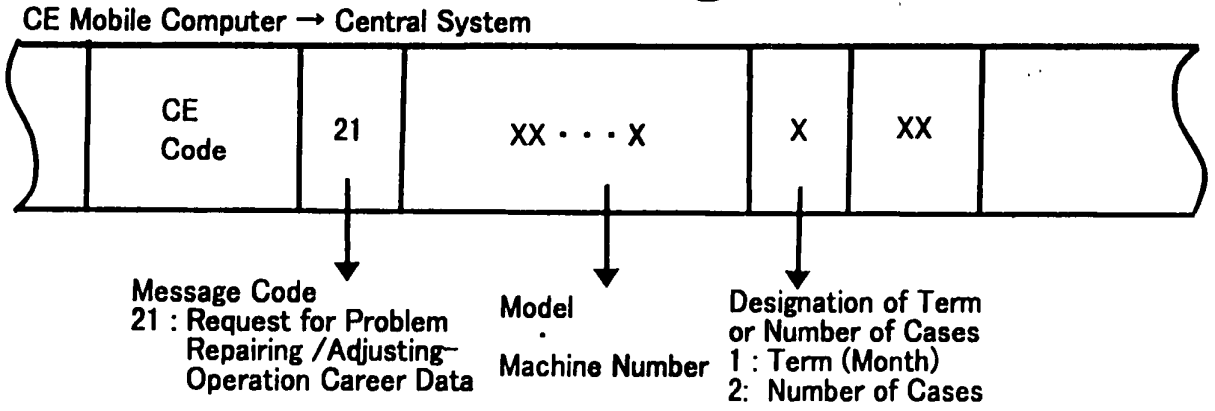

CE Mobile Computer → Central System
CE Code
21
XX · · · X
X
XX
Message Code
21 : Request for Problem Repairing /Adjusting- Operation Career Data
Model
·
Machine Number
Designation of Term or Number of Cases
1 : Term (Month)
2: Number of Cases

Fig. 9B

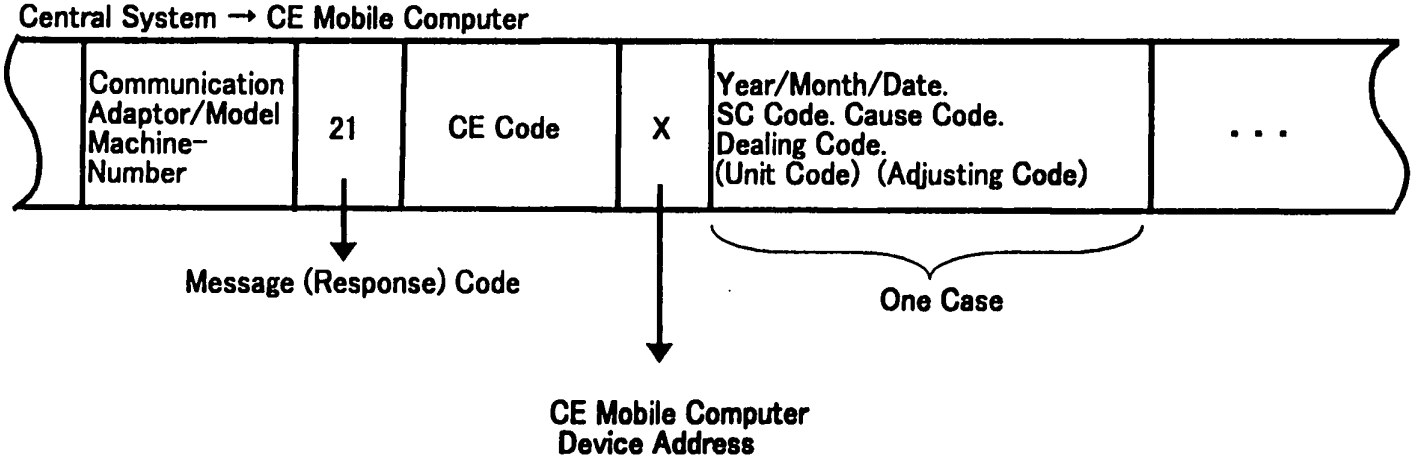

Central System → CE Mobile Computer
Communication Adaptor/Model Machine- Number
21
CE Code
X
Year/Month/Date.
SC Code. Cause Code.
Dealing Code.
(Unit Code) (Adjusting Code)
· · ·
Message (Response) Code
One Case
CE Mobile Computer Device Address

Fig. 10

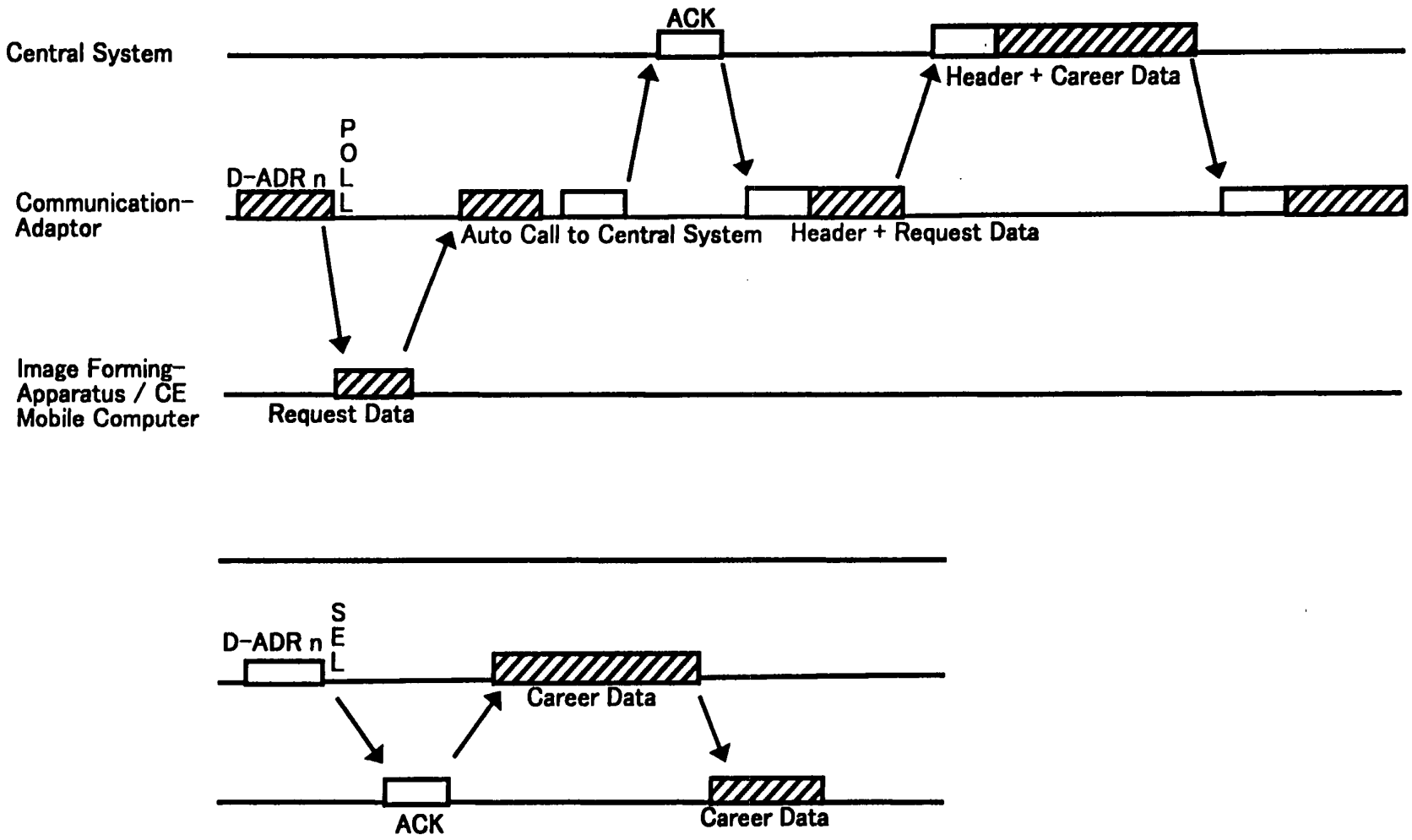

Central System
ACK
Header + Career Data
P
O
L
D-ADR n
L
Communication-
Adaptor
Auto Call to Central System
Header + Request Data
Image Forming-
Apparatus / CE
Mobile Computer
Request Data
S
E
L
D-ADR n
Career Data
ACK
Career Data

Fig. 11

No.	Position Code	Name
1	XX····11	Fixing
2	XX····12	Side Feeding Path
3	XX····13	First Feeding Unit
⋮	⋮	⋮

Fig. 12A

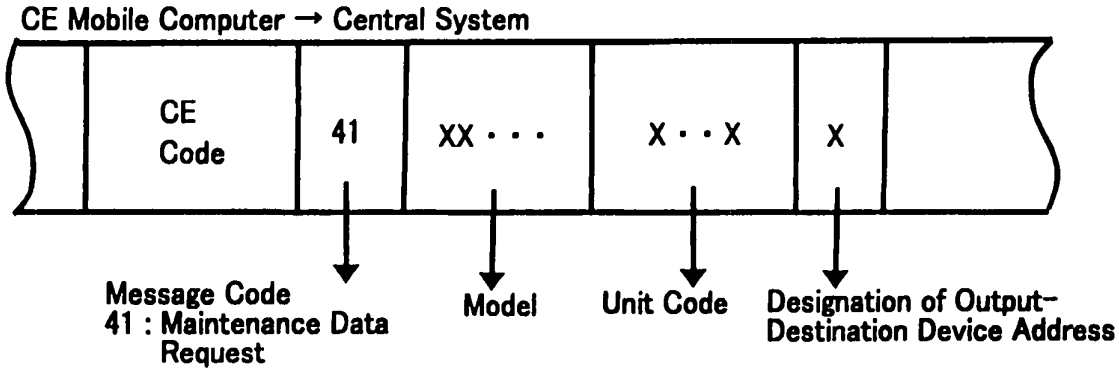


Fig. 12B

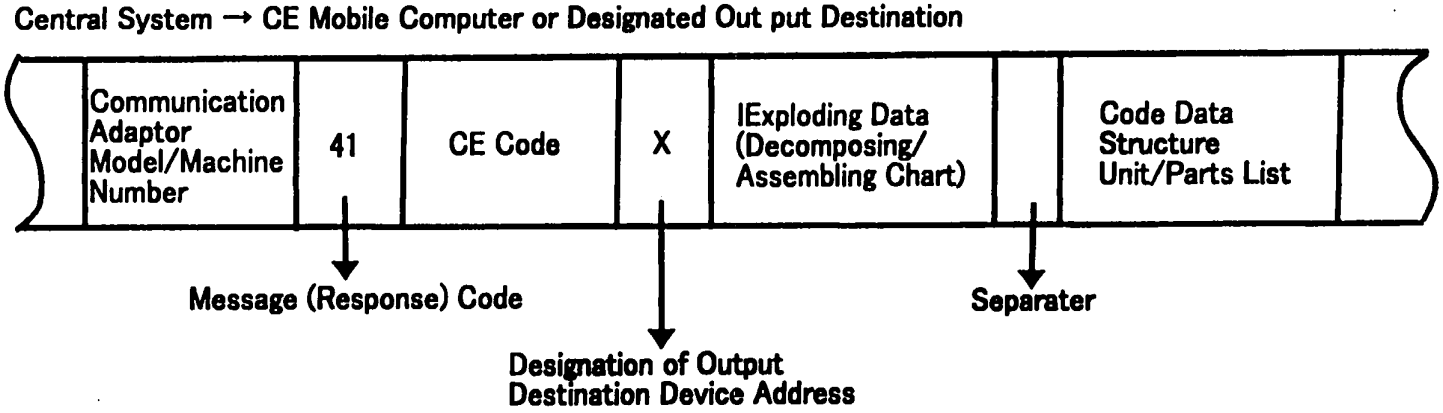
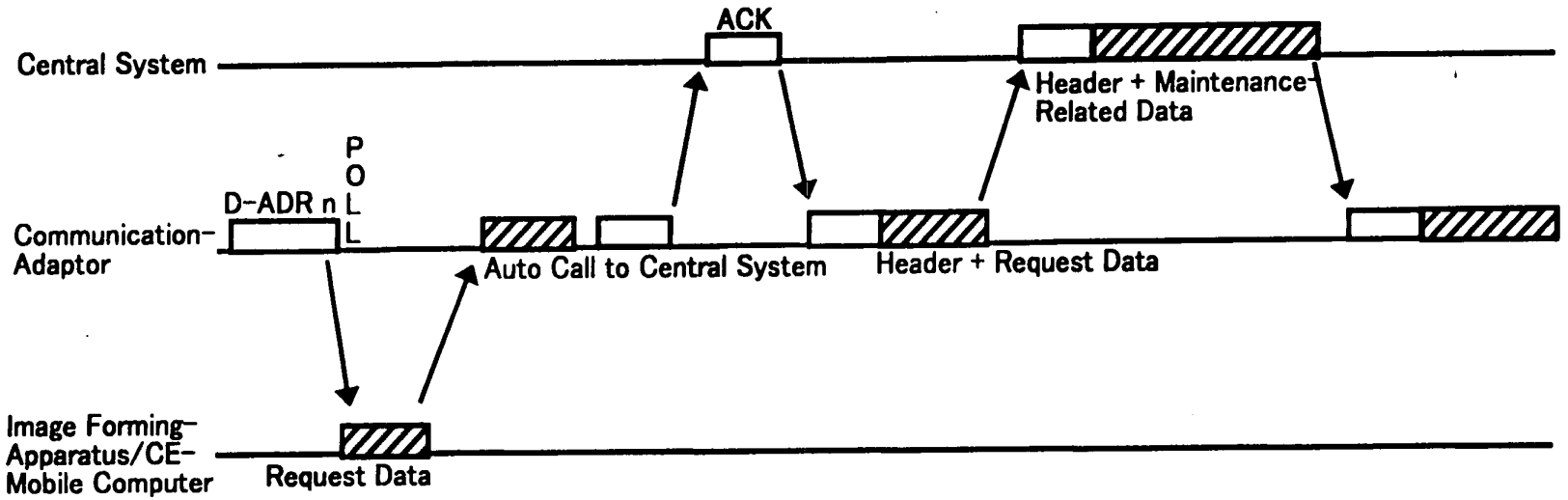


Fig. 13


Central System
ACK
Header + Maintenance-Related Data
POLL
D-ADR n
Communication-Adaptor
Auto Call to Central System
Header + Request Data
Image Forming-Apparatus/CE-Mobile Computer
Request Data

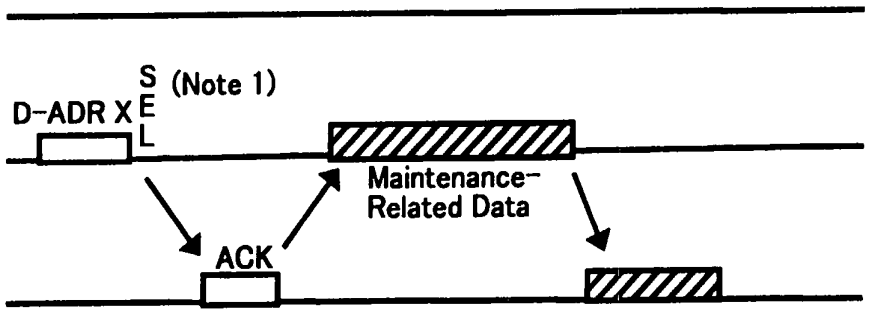

SEL
(Note 1)
D-ADR X
Maintenance-Related Data
ACK

Fig. 14

Drawing Number	Parts Number	Name
.		
.		
.		
20	XX····X0	Guide Pick up
21	XX····X1	Arm Pick up Assembling
22	XX····X2	Stopper Feed Assembling
23	XX····X3	Shaft Feed
24	XX····X4	Guide Feed Up Stair
.	.	.
.	.	.
.	.	.

Fig. 15

SC No.	SC Item
•	
•	
•	
101	Illumination System Error
102	Home Position Error
103	XX Sensor Abnormal
•	
•	
•	

Fig. 16

Cause Code	Contents
•	
•	
•	
211	Stain
212	Unit·Parts Damage
213	Screw looseness
•	
•	
•	

Fig. 17

Code No.	Repairing Contents
002	Cleaning
003	Unit·Parts Exchange
•	
•	
•	
201	Voltage Amount Adjusting

Fig. 18

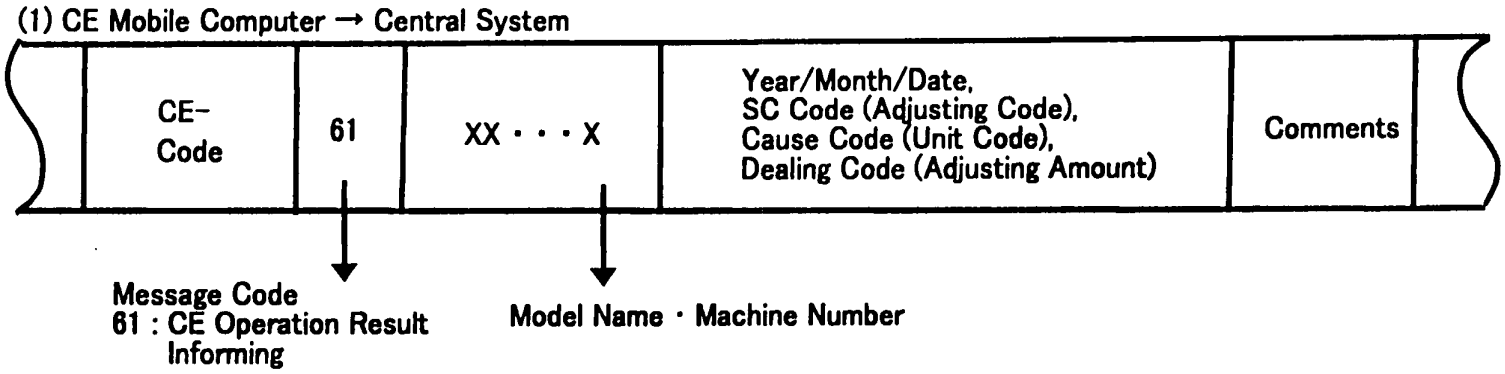

(1) CE Mobile Computer → Central System
CE-
Code
61
XX・・・X
Year/Month/Date,
SC Code (Adjusting Code),
Cause Code (Unit Code),
Dealing Code (Adjusting Amount)
Comments
Message Code
61 : CE Operation Result
Informing
Model Name・Machine Number

Fig. 19

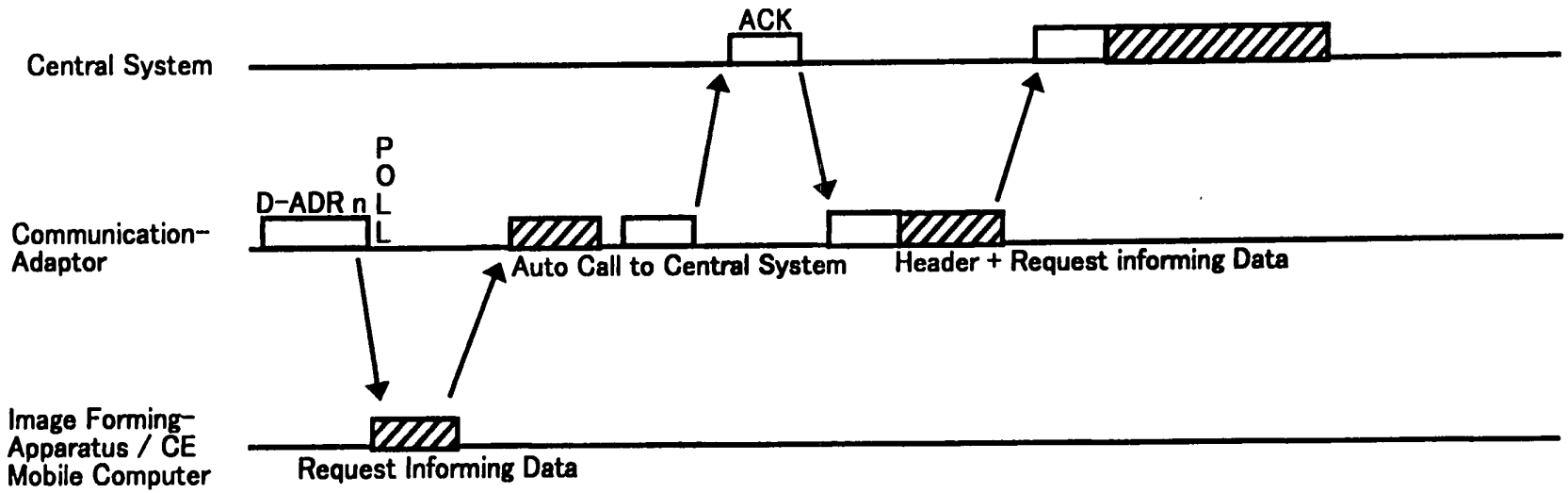

Central System
ACK
P
O
L
L
D-ADR n
Communication-
Adaptor
Auto Call to Central System
Header + Request informing Data
Image Forming-
Apparatus / CE
Mobile Computer
Request Informing Data

Fig. 20A

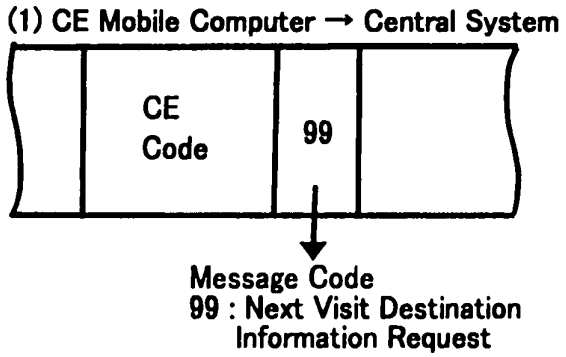


Fig. 20B

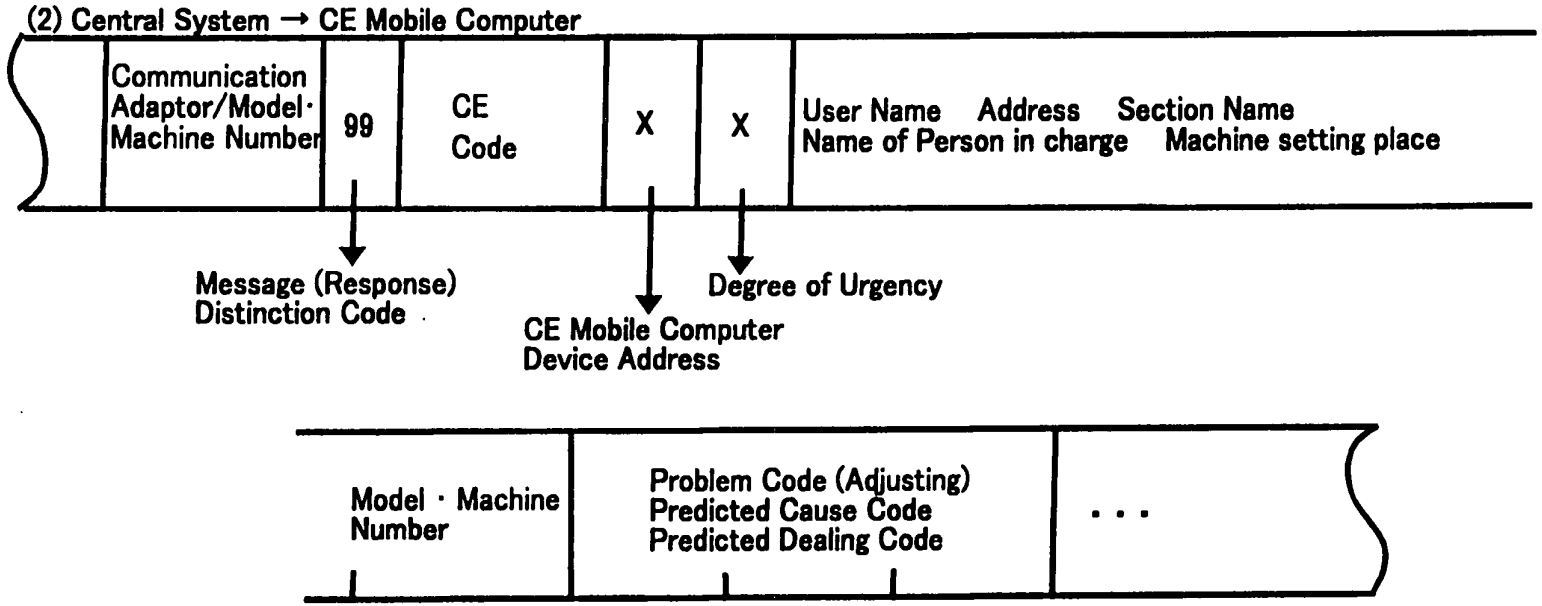
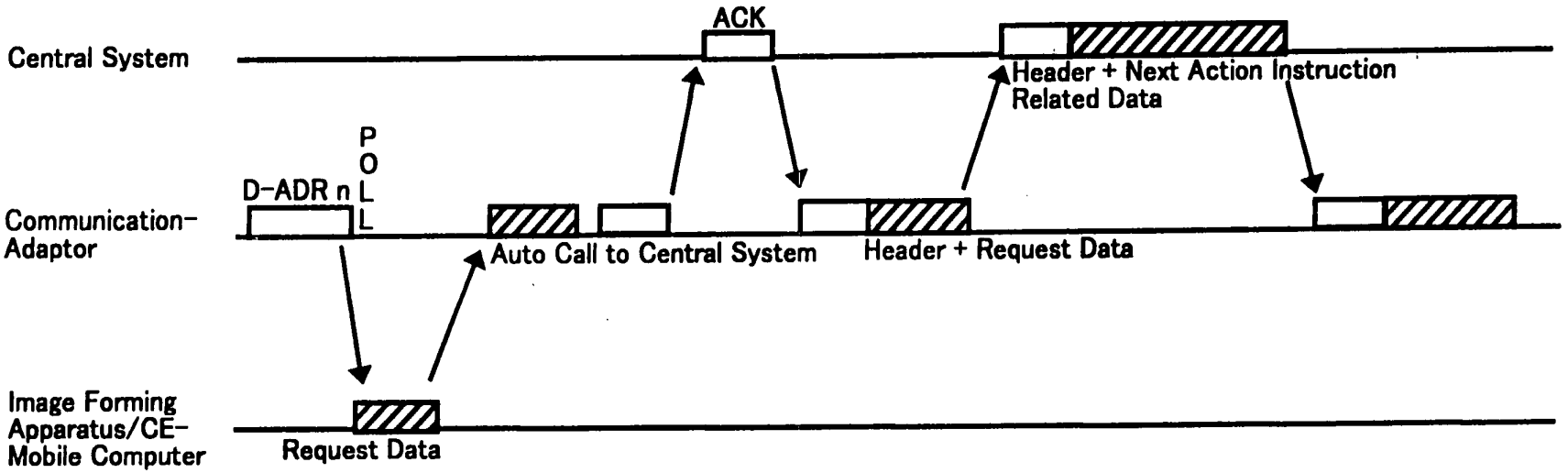


Fig. 21


Central System
ACK
Header + Next Action Instruction Related Data
P O L L
D-ADR n
Communication-Adaptor
Auto Call to Central System
Header + Request Data
Image Forming Apparatus/CE-Mobile Computer
Request Data

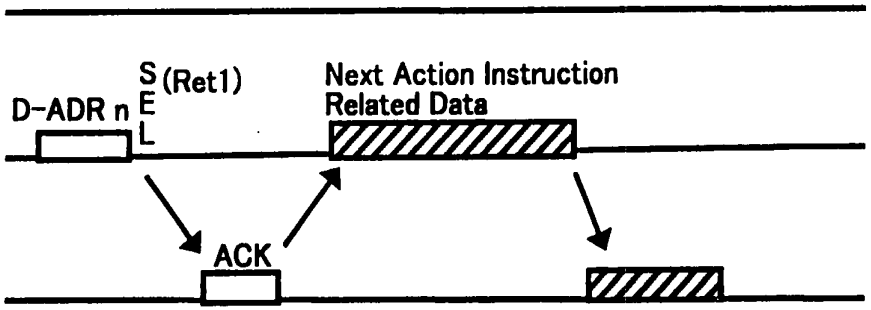

S E L (Ret1)
D-ADR n
Next Action Instruction Related Data
ACK

Fig. 22

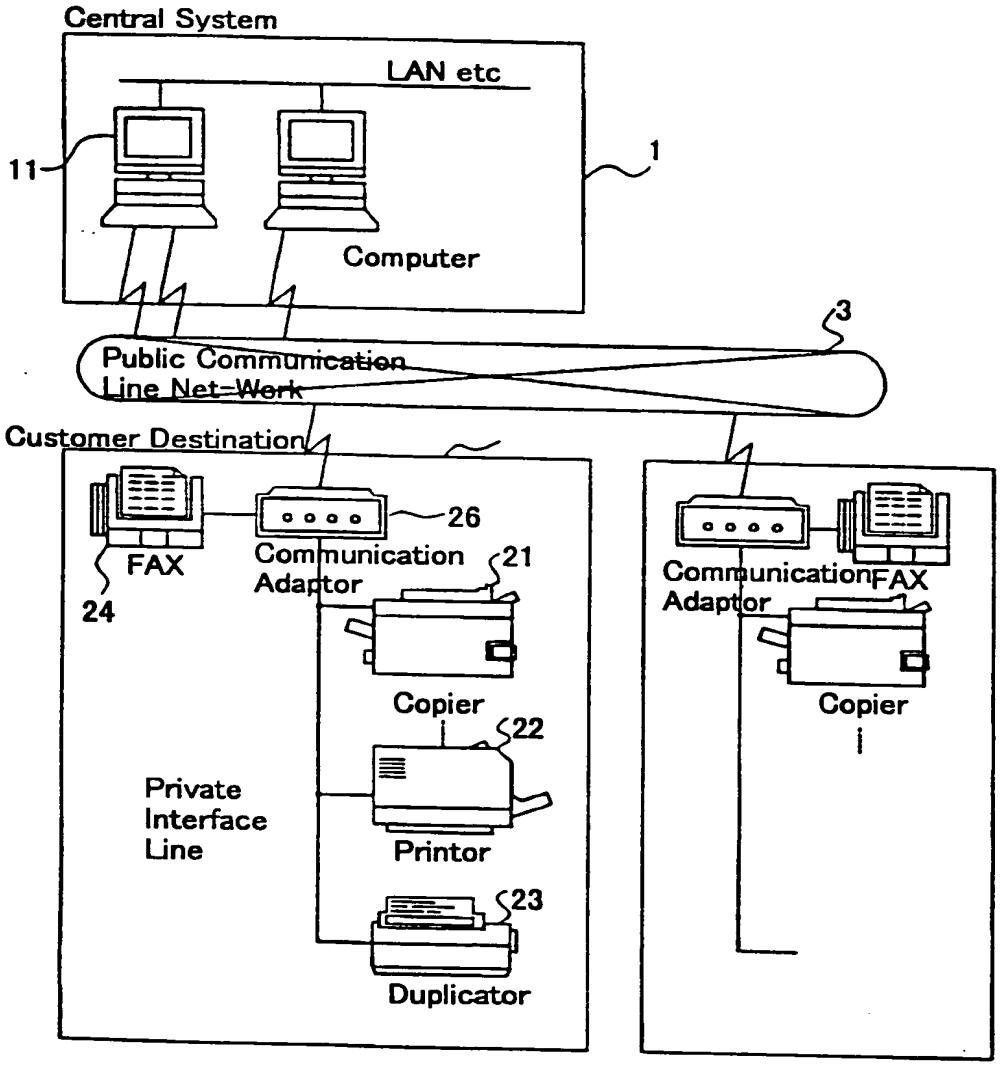

Central System
LAN etc
11
1
Computer
3
Public Communication
Line Net-Work
Customer Destination
FAX
24
26
Communication
Adaptor
21
Copier
22
Private
Interface
Line
Printor
23
Duplicator
Communication
Adaptor
FAX
Copier

Fig. 23

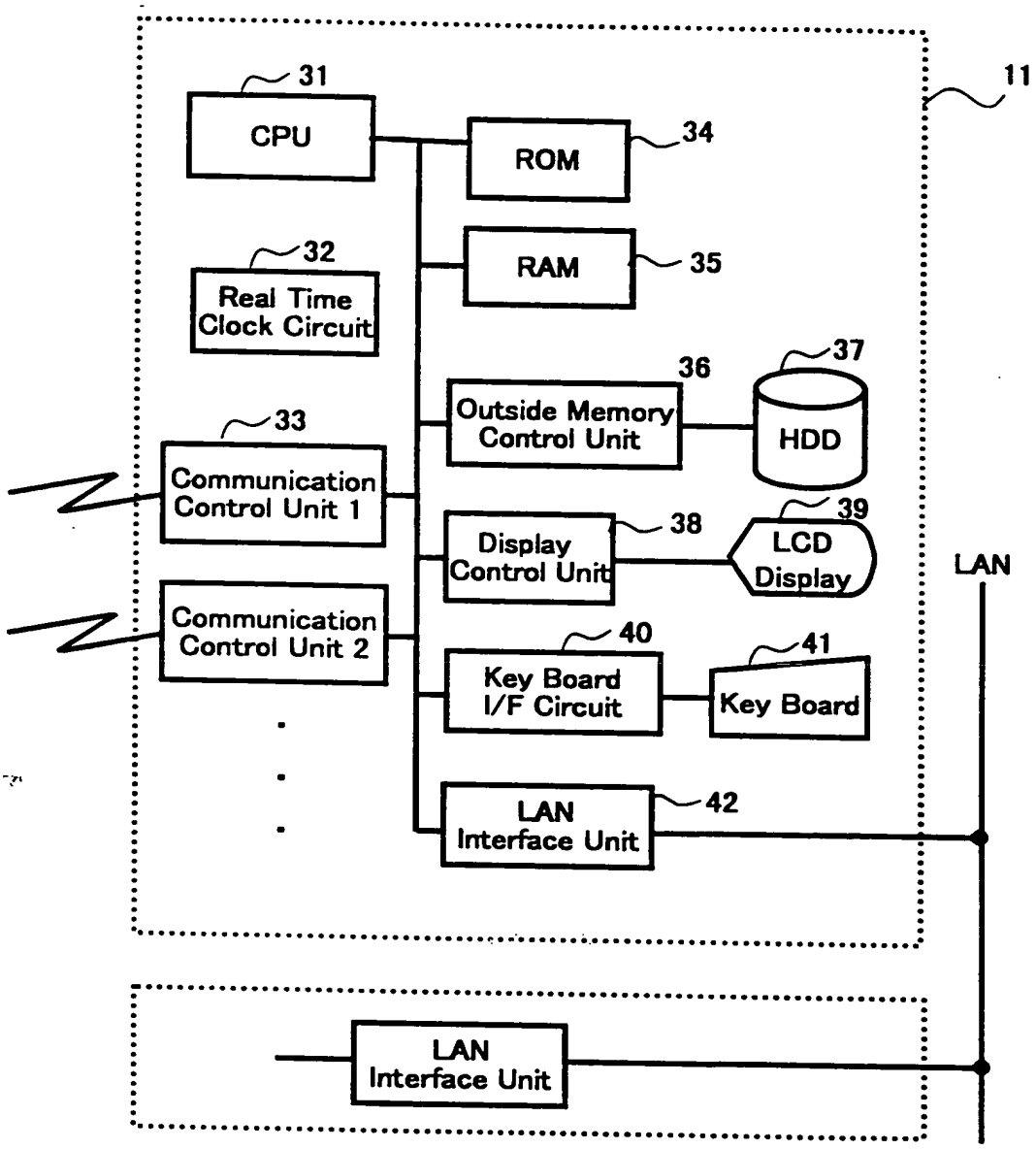

11
31
CPU
34
ROM
32
Real Time Clock Circuit
35
RAM
36
37
Outside Memory Control Unit
HDD
33
Communication Control Unit 1
38
39
Display Control Unit
LCD Display
LAN
Communication Control Unit 2
40
41
Key Board I/F Circuit
Key Board
42
LAN Interface Unit
LAN Interface Unit

Fig. 24

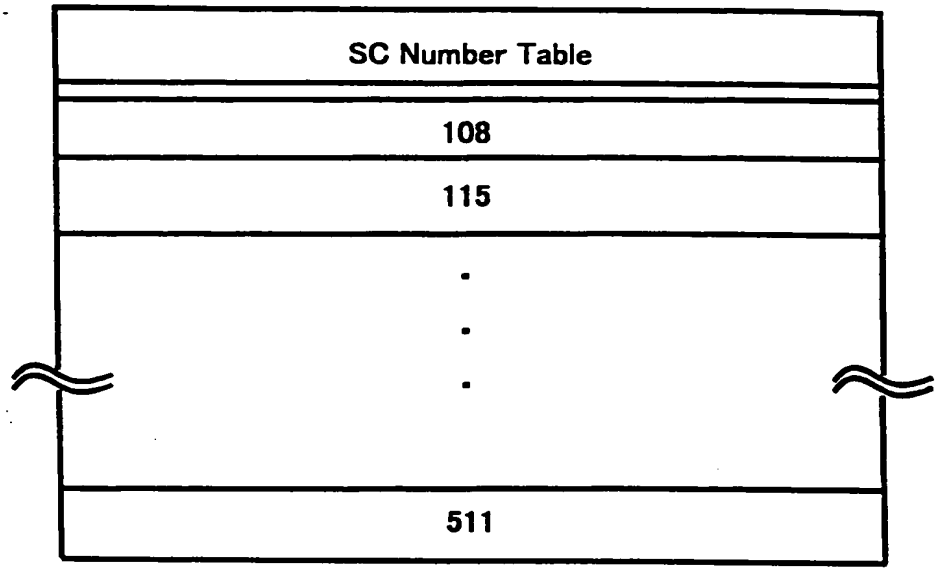


Fig. 25A

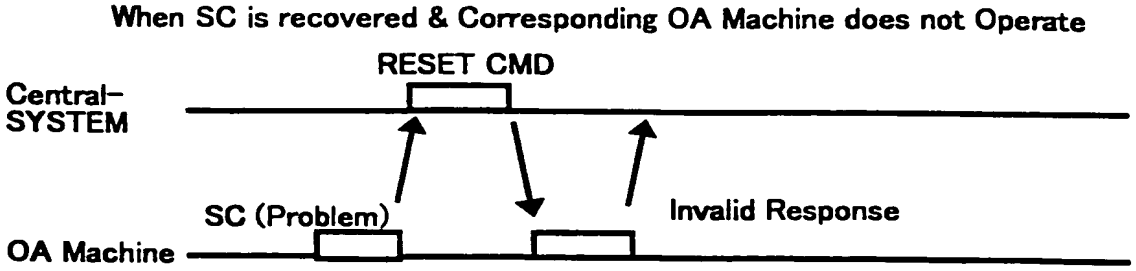


Fig. 25B

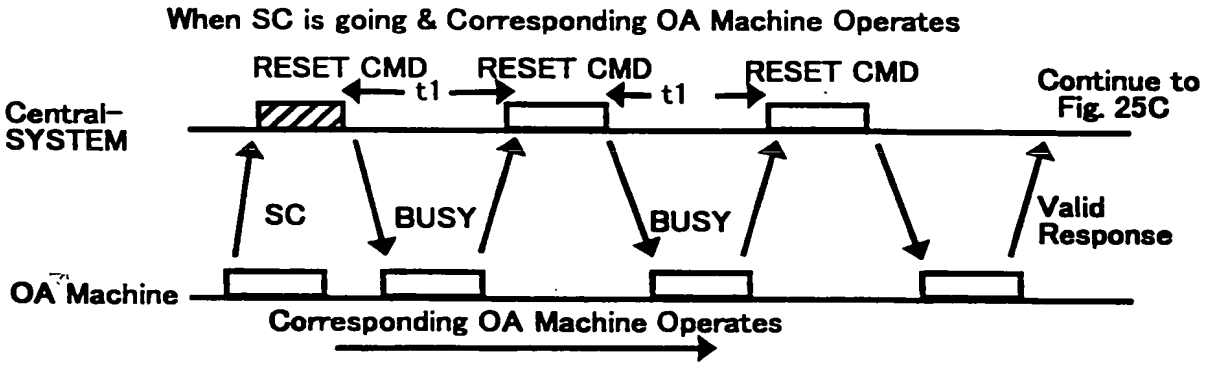


Fig. 25C

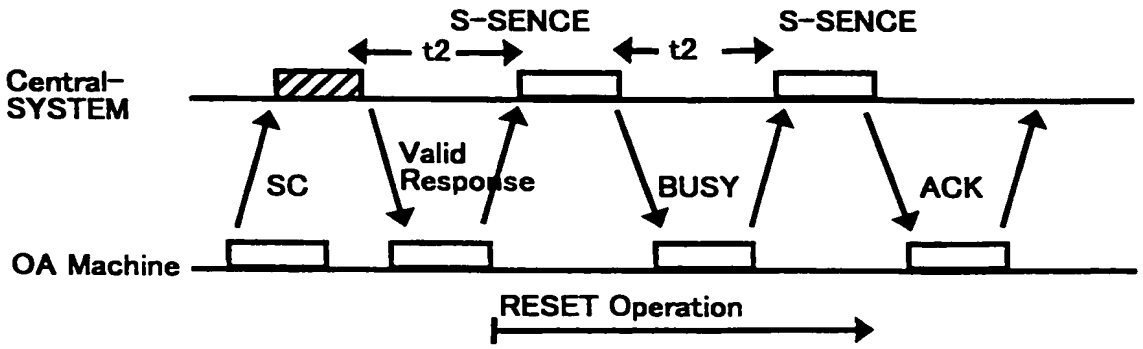


Fig. 26

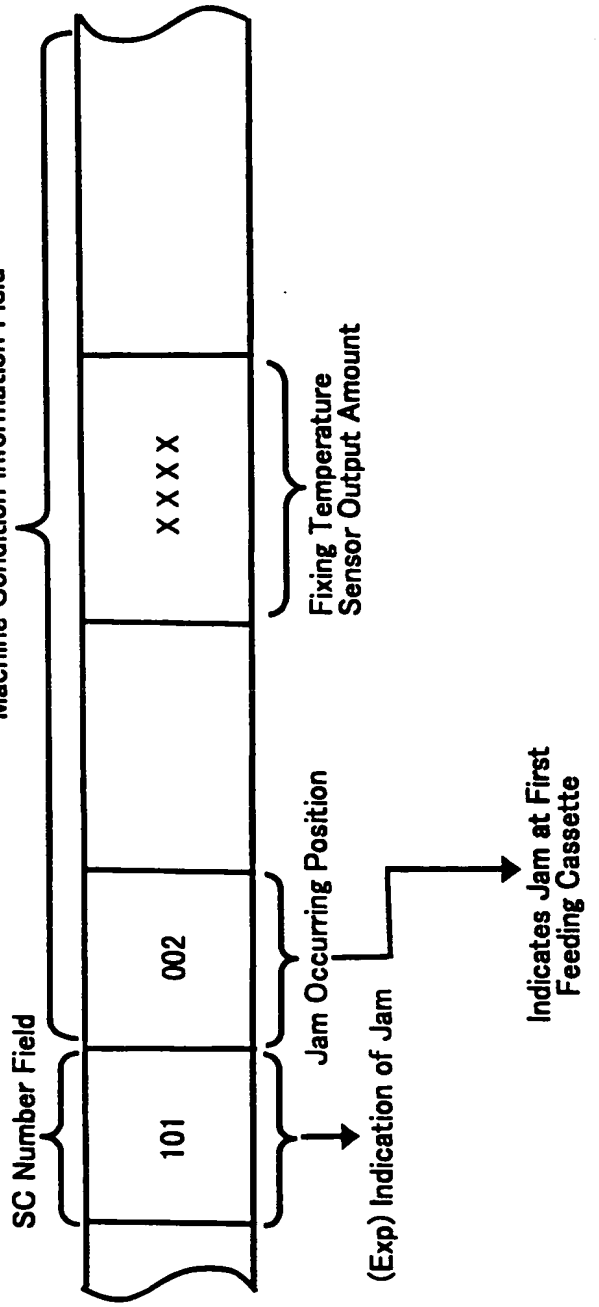

Machine Condition Information Field
SC Number Field
101
002
XXXX
Fixing Temperature Sensor Output Amount
Jam Occurring Position
(Exp) Indication of Jam
Indicates Jam at First Feeding Cassette

Fig. 27

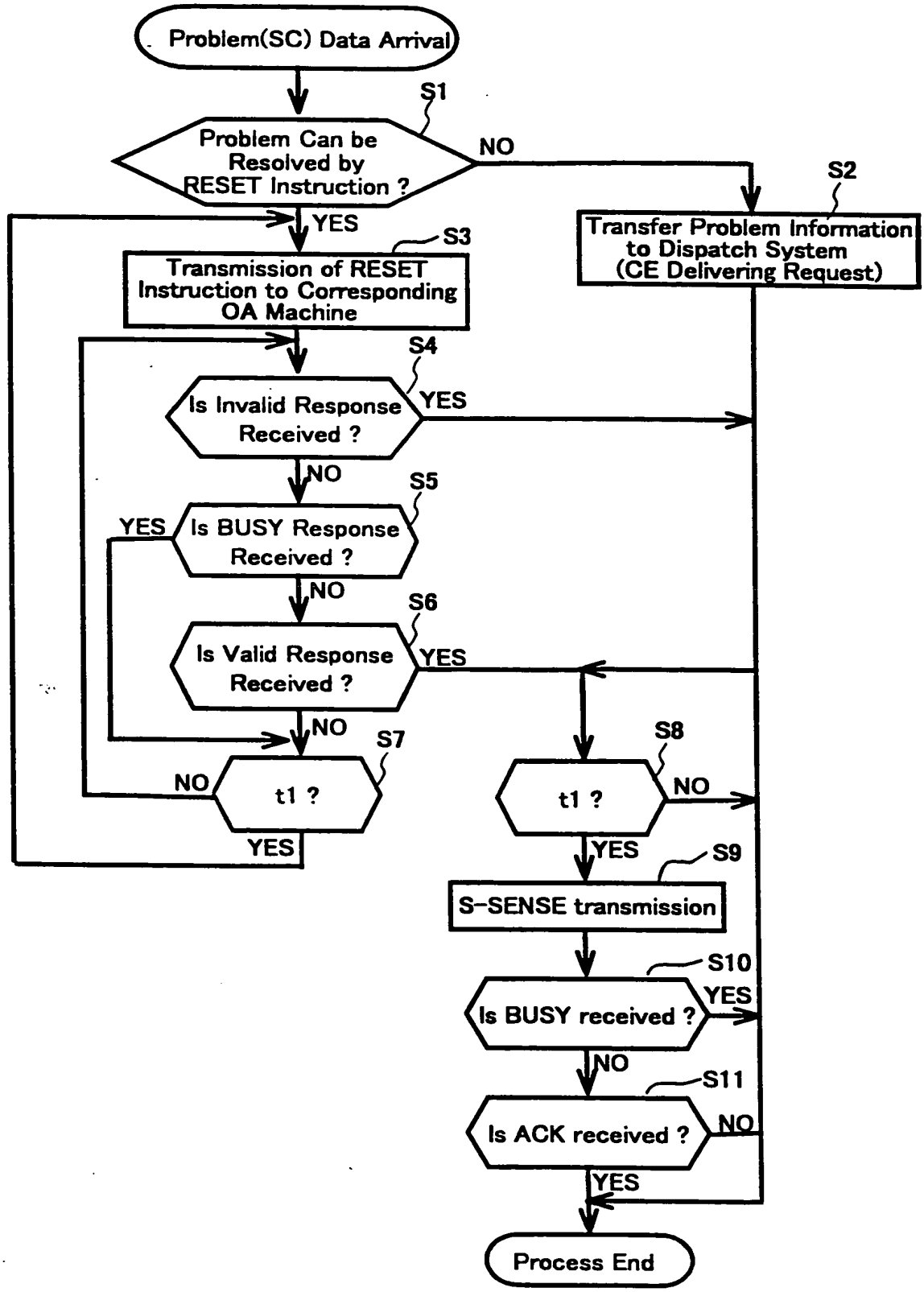

Problem(SC) Data Arrival
S1
Problem Can be Resolved by RESET Instruction ?
NO
S2
Transfer Problem Information to Dispatch System (CE Delivering Request)
YES
S3
Transmission of RESET Instruction to Corresponding OA Machine
S4
Is Invalid Response Received ?
YES
NO
S5
YES
Is BUSY Response Received ?
NO
S6
Is Valid Response Received ?
YES
NO
S7
NO
t1 ?
YES
S8
t1 ?
NO
YES
S9
S-SENSE transmission
S10
Is BUSY received ?
YES
NO
S11
Is ACK received ?
NO
YES
Process End

Fig. 28

SEQ No.	User ID	Model Code	Call-Classification	Data-Arrival-Time	Present-Condition-Code	. . .	Erase Flag
0005	XX···03	XXXXX	301	09 : 10	5001		1
0006	XX···19	XXXXX	100	09 : 10	5001		1
0007	XX···50	XXXXX	102	09 : 11	5001		0
⋮							

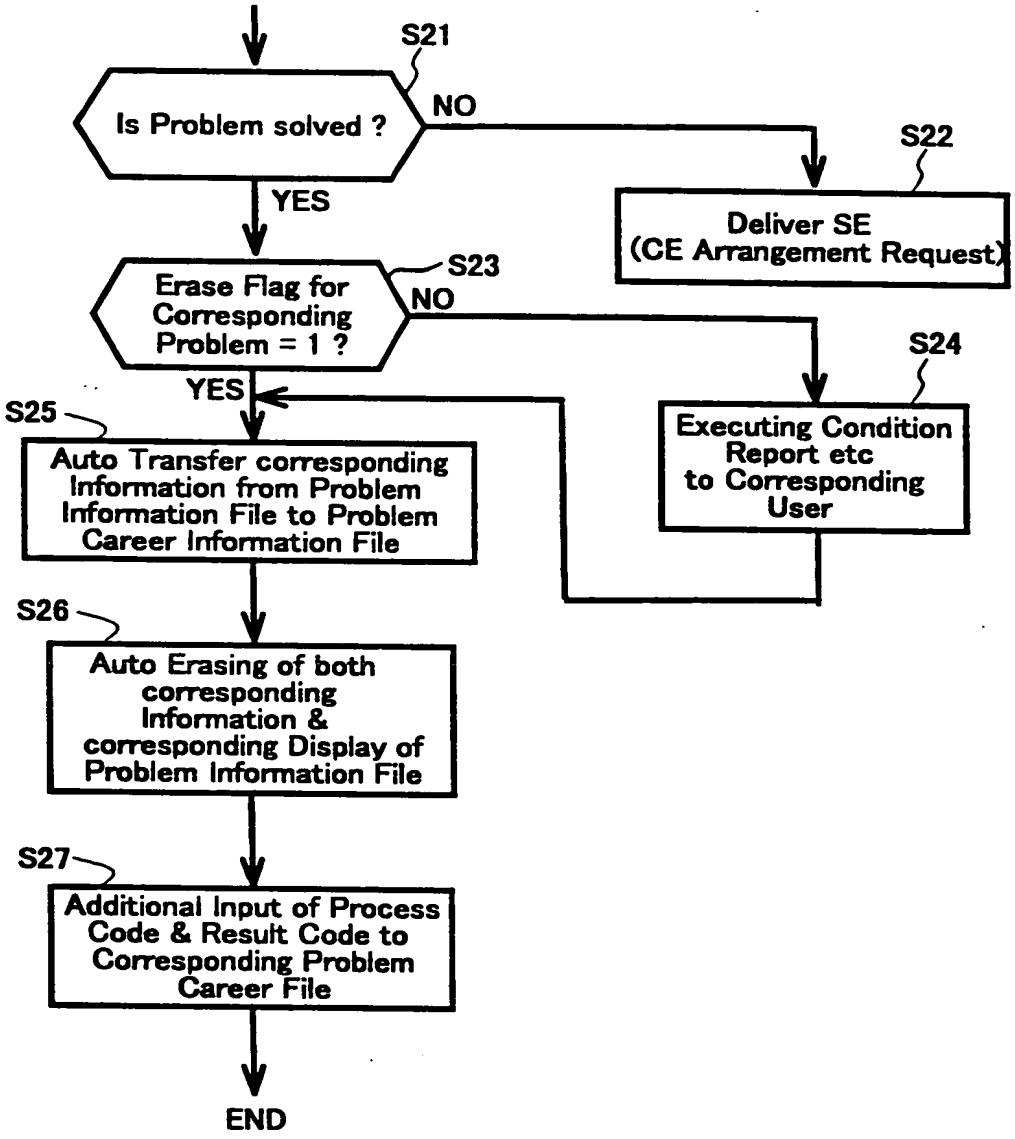
Fig. 29

SEQ No.	User Name	Model Name	Call-Classification	Data-Arrival-Time	Present-Condition	. . .
0005	Co; Ltd., RRR	FT-7000	SC301	09 : 10	During Remote-Recovering	
0006	SSS Business Concern	MF-250F	SC100	09 : 10	During CE-Delivering	
0007	TTT Store	FT-5500	SC102	09 : 11	During Remote-Recovering	
⋮						

Fig. 30

User ID	SEQ No.	Year/ Month/ Data	Model Machine Number	Call- Classifi- -cation	Dealing- Code	Unit·Parts Code	Result- Code
···01	0001	980301	XXXXX1000	301	002		2 - 0
	0002	980310	XXXXX3550	100	009	XYY - 5678	1 - 0
	0003	980303	XXXXX1000	302	009	YYX - 1234	1 - 0
	0004	980304	XXXXX1000	301	002		2 - 0
	0005	980305	XXXXX1000	301	002		2 - 0
	0006	980311	XXXXX1000	303	009	XYX - 2345	2 - 0
	⋮						

Fig. 31


S21
Is Problem solved ?
NO
S22
Deliver SE
(CE Arrangement Request)
YES
S23
Erase Flag for Corresponding Problem = 1 ?
NO
S24
YES
S25
Executing Condition Report etc to Corresponding User
Auto Transfer corresponding Information from Problem Information File to Problem Career Information File
S26
Auto Erasing of both corresponding Information & corresponding Display of Problem Information File
S27
Additional Input of Process Code & Result Code to Corresponding Problem Career File
END